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Indian Standard

SPECIFICATION FOR SMITH BITS

(Revised)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard
SPECIFICATION FOR SMITH BITS
(Revised)

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Indian Standard

SPECIFICATION FOR SMITH BITS

(Revised)

0. FOREWORD

0.1 This Indian Standard (Revised) was adopted by the Indian Standards Institution on 7 June 1965, after the draft finalized by the Hand Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard deals with four common types of smith bits extensively used in hand drilling.

0.3 This standard was first published in 1954 and has now been revised. All values of quantities have now been given in the metric system. A sampling plan and criteria for conformity has also been included as Appendix A.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for the following four types of smith bits :

a) Flat,
b) Countersunk rose,
c) Reamer half round, and
d) Reamer square.

2. MATERIAL

2.1 The smith bits shall be made from good quality carbon or alloy tool steel. Steel conforming to designation T80 of Schedule VI of IS : 1570-1961† is one of the suitable steels for this purpose.

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*Rules for rounding off numerical values (*revised*).

†Schedules for wrought steels for general engineering purposes.

3. SHAPES AND DIMENSIONS

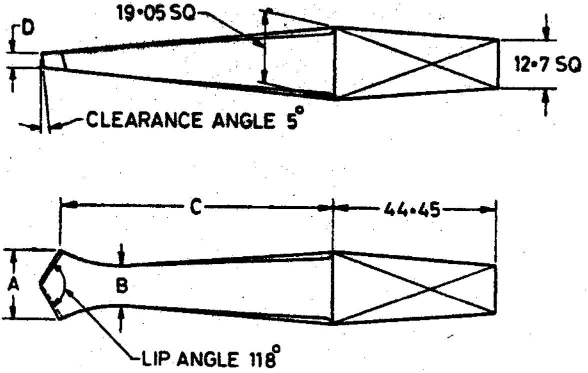
3.1 The sizes, shapes, nominal dimensions and tolerances of the four types of smith bits shall respectively be as given in Tables 1, 2, 3 and 4.

3.2 Minor deviations in the non-essential dimensions, not affecting the performance or serviceability of smith bits, shall be permitted if these are according to the recognized trade practice.

TABLE 1 DIMENSIONS OF SMITH BITS, FLAT

(*Clause* 3.1)

All dimensions in millimetres.



NOMINAL SIZE *A*	*B*	*C*	*D*
±1	±1	±6	±1
6	4	75	1·5
10	6	75	1·5
13	7	75	2·5
16	10	75	3
19	11	75	4
22·5	13	75	5
25	14	75	6
30	16	75	6
33·5	19	75	7
35·5	22·5	75	8
37·5	25	75	9

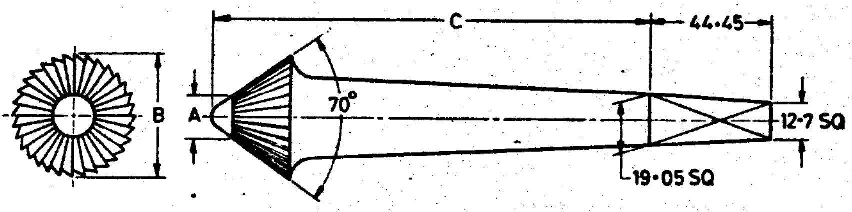
Designation: A smith bit, flat, having a nominal size of cutting edge *A* = 10 mm shall be designated as:

Smith Bit, Flat, 10 IS: 552

TABLE 2 DIMENSIONS OF SMITH BITS, COUNTERSUNK ROSE

(*Clause* 3.1)

All dimensions in millimetres.



NOTE — The serrations shown in the figure are only illustrative.

For Rivets	*A*	*B*	*C*
6 to 16	5	31·5	85
18 „ 24	16	45	160
27 „ 39	25	67	180

Designation: A smith bit, countersunk rose, for rivets 6 to 16 mm diameter shall be designated as:
Smith Bit, Countersunk Rose, 16 IS: 552

4. HARDNESS

4.1 The cutting edges of the smith bits shall have a hardness of 500 to 700 *HV* or 54 to 59 *HRC* (*see* IS : 1501-1959* and IS : 1586-1960†).

5. DESIGNATION

5.1 The smith bits shall be designated by the commonly used name, the nominal size and the number of this specification. Examples of designations for different types of smith bits are given with the relevant tables.

6. MANUFACTURE

6.1 The smith bits shall be cleanly forged in one piece and the cutting edges shall be suitably hardened, tempered and ground true, ready for use.

7. WORKMANSHIP AND FINISH

7.1 The smith bits shall be well shaped and be free from seams, brittleness, pitting, scales, burrs and other defects.

---

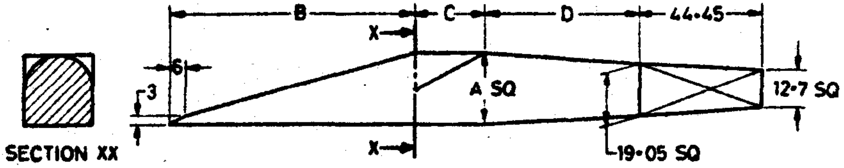
*Method for Vickers hardness test for steel.

†Method for Rockwell hardness test (B & C scales) for steel.

TABLE 3 DIMENSIONS OF SMITH BITS, REAMER HALF ROUND

(*Clause* 3.1)

All dimensions in millimetres.



NOMINAL SIZE *A*	*B*	*C*	*D*
±1	±3	±2	±2
13	90	25	56
16	90	25	56
19	90	25	56
22·5	90	25	56
25	90	25	56

Designation: A smith bit, reamer half round, having a nominal size A = 19 mm shall be designated as:
Smith Bit, Reamer Half Round, 19 IS: 552

8. SAMPLING

8.1 Unless otherwise agreed upon between the purchaser and the manufacturer, the sampling plan and criteria for conformity given in Appendix A shall be followed.

9. PRACTICAL TESTS

9.1 Each smith bit in the sample shall be subjected to practical tests in a manner consistent with its general use and shall not show any sign of damage on completion of the test.

10. CONDITIONS OF SUPPLY

10.1 The requirements regarding works inspection, testing and inspection facilities, shall conform to those specified in IS : 1387-1959*.

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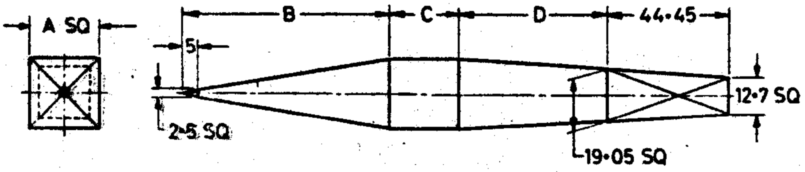
* General requirements for the supply of metals and metal products (**Since revised**).

TABLE 4 DIMENSIONS OF SMITH BITS, REAMER SQUARE

(*Clause* 3.1)

All dimensions in millimetres.



NOMINAL SIZE *A*	*B*	*C*	*D*
±1	±3	±2	±2
13	75	25	54
16	75	25	54
19	75	25	54
22·5	75	25	54
25	75	25	54

Designation: A smith bit, reamer square, having a nominal size A = 25 mm shall be designated as:

Smith Bit, Reamer Square, 25 IS: 552

11. MARKING

11.1 Each smith bit shall be clearly and legibly stamped with the nominal size, manufacturer's name, initials and/or his trade-mark.

11.1.1 The smith bits may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

12. PRESERVATIVE TREATMENT AND PACKING

12.1 The body of each smith bit shall be coated with a suitable anti-corrosive paint and the ground portion shall be coated with a suitable anti-corrosive grease or varnish.

12.2 The smith bits shall be securely packed in suitable packing cases of a size convenient for handling in transit, as may be specified by the purchaser.

12.3 Each type and size of smith bit shall be separately packed, and no package shall contain more than one type of smith bits.

APPENDIX A

(*Clauses* 0.3 *and* 8.1)

SAMPLING OF SMITH BITS AND CRITERIA FOR CONFORMITY

A-1. SCALE OF SAMPLING

A-1.1 Lot — All smith bits in a consignment belonging to the same nominal size and manufactured under relatively similar conditions of production shall constitute a lot.

A-1.2 Smith bits shall be selected and tested from each lot separately for ascertaining their conformity to the requirements of this specification.

A-1.3 The number (n) of smith bits to be selected from a lot shall depend on the size (N) of the lot and shall be in accordance with col 1 and 2 of Table 5. These smith bits shall be selected at random from the lot.

TABLE 5 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

Lot Size N (1)	Sample Size n (2)	Permissible Number of Defectives (3)
Up to 25	3	0
26 „ 100	13	1
101 „ 150	20	2
151 „ 300	32	3
301 „ 500	50	5
501 „ 1 000	80	7
1 001 and above	125	10

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 Each of the smith bits selected according to **A-1.3** shall be tested for all the requirements of this specification. A smith bit failing to meet any one or more of the requirements shall be regarded as defective.

A-2.2 The lot shall be considered as conforming to the requirements of this specification if the number of defectives in the sample does not exceed the permissible number given in col 3 of Table 5.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	$1\ \mathrm{N} = 1\ \mathrm{kg.1\ m/s^2}$
Energy	joule	J	$1\ \mathrm{J} = 1\ \mathrm{N.m}$
Power	watt	W	$1\ \mathrm{W} = 1\ \mathrm{J/s}$
Flux	weber	Wb	$1\ \mathrm{Wb} = 1\ \mathrm{V.s}$
Flux density	tesla	T	$1\ \mathrm{T} = 1\ \mathrm{Wb/m^2}$
Frequency	hertz	Hz	$1\ \mathrm{Hz} = 1\ \mathrm{c/s}\ (\mathrm{s^{-1}})$
Electric conductance	siemens	S	$1\ \mathrm{S} = 1\ \mathrm{A/V}$
Pressure, stress	pascal	Pa	$1\ \mathrm{Pa} = 1\ \mathrm{N/m^2}$

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